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Determinants Shaping Choices for Robo and Human Advisors in German Financial Market: A Theoretical Review

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Abstract

The financial industry has experienced a radical change brought about by the development of robo-advisors, a technology that combines financial technology (fintech) and artificial intelligence (AI). With the ongoing growth of digitalisation, AI-based advisory services are transforming the ways in which people engage in financial services to provide new inclusion and access possibilities. These platforms help people, especially those who are not financially smart enough to take advantage of investment options previously available only through the traditional advisory channels. The current theoretical analysis is a critical explanation of the introduction of robo-advisors in German financial marketplace, which is marked by high regulation, cultural conservatism, and a high degree of trust in human advisors. Based on Schumpeter's Innovation Theory, the models adopted in terms of technology include the Technology Acceptance Model (TAM), the Technology Adoption Life Cycle (TALC), and the Theory of Reasoned Action (TRA), all of which discuss the behavioural and structural levels of adoption. Although these frameworks provide useful insights into the process of innovation diffusion and user acceptance, they do not tend to consider key cultural and ethical aspects of the innovation process, such as privacy, trust, and institutional credibility. Through a synthesis of these models, the current review reveals a comprehensive picture of the interplay of technological advancement, behavioral intention, and cultural context in the decision-making process of technology adoption. It underlines the need for responsible and culturally sensitive innovation in the German fintech market and suggests its practical implications for policymakers, financial institutions, and tech developers who want to drive responsible and sustainable digitalisation.

Keywords: consumer behaviour, digital finance, financial technology, Schumpeter's innovation theory, technology acceptance model, technology

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adoption life cycle, theory of reasoned action

Introduction

The integration of new technologies into the financial industry has revolutionized the traditional ways of banking and investment management significantly. Blockchain technology, peer-to-peer lending platforms, mobile banking, digital wallets, and other new and emerging channels have widened access, fixed the supply of financial services, and adapted services to individual needs (Arner et al., 2016). This has been further driven by changing consumer demands, widespread use of smartphones, cloud computing, and regulatory initiatives such as open banking, all of which continue to enhance digital financial solutions across the world (Gomber et al., 2017; Zetzsche et al., 2020).

Among these innovations, robo-advisors have become one of the most outstanding technologies in digital finance. These robotic systems use algorithms to provide low-cost personalized investment advice without involving any human financial consultant. Robo-advisors were initially capable of rebalancing a portfolio; however, they have been improved with artificial intelligence (AI), machine learning (ML), and natural language processing (NLP) to enable more responsive and precise investment management (Sironi, 2016). These solutions are inexpensive, accessible at all times, and transparent (especially in the periods of low interest rates and increased popularity of exchange-traded funds (ETFs) and attract both new and experienced investors (Atwal & Bryson, 2021; Tan, 2020).

Since 2013, the financial market in Germany has experienced a steep increase in the use of robo-advisory solutions by financial institutions, start-ups, and investment companies that aim to be competitive (Au & Krahnhof, 2018). These have been encouraged by regulatory frameworks like MiFID II and programs that encourage transparency and protection of data (Zetzsche et al., 2020). The COVID-19 crisis also contributed to the increased transition to digital investment solutions as financial institutions increased their online activities to keep their customers engaged in times of uncertainty (Moden & Neufeld, 2020).

Even with these developments, there remains considerable ambiguity as to why some consumers are more willing to use robo-advisors than others (who are still inclined to use the human financial advisor). Most of the literature on the topic involves technology performance, cost-effectiveness,

and operational convenience, neglecting behavioural, psychological, and social aspects that determine trust, risk perception, and decisions (Belanche et al., 2019; Sironi, 2016; Singh & Kumar, 2025). Besides, studies in this field are usually conceptually disjointed. Majority of the studies use single models of adoption, such as Technology Acceptance Model (TAM) or Theory of Reasoned Action (TRA), without paying attention to the interaction of these models with innovation and behavioural theories (Dinev et al., 2023).

This depicts a theoretical gap. For instance, the Innovation Theory introduced by Schumpeter, which describes the mechanism of disruptive innovations threatening the existing markets, has hardly been implemented in the sphere of robo-advisory services. Equally, the Technology Adoption Life Cycle (TALC) that characterizes the different rates of adoption of new technologies by the consumers have not been well exploited to explain the German consumer reactions to digital financial innovations (Mambile & Ishengoma, 2024, Ulrich et al., 2021). Also, trust and perceived risk, which are essential constructs in the context of financial decisions, are poorly represented in empirical studies on the adoption of robo-advisors in Germany, a market with strong conservative views on financial technology (Atwal & Bryson, 2021; Reddavide, 2018; Zhang, 2024).

The shortcoming of the existing research is thus the poor comprehension of the factors that influence the preference of consumers between robo and human financial advisers in Germany. In the absence of such insight, financial institutions would be at risk of not creating appropriate advisory solutions, while policymakers might find it difficult to identify how new behavioural risks of algorithmic financial advice are formed (Au & Krahnhof, 2018; Glaser et al., 2022).

To fill this gap, the current research incorporates the Innovation Theory of Schumpeter, as well as TAM, TALC, and TRA to determine the influence of innovation, perceived usefulness, trust, risk, and social influence on consumer decision-making between robo and human financial advisors in the German financial market. The integration of technological and behavioural approaches provides the research with a comprehensive view of the factors effective in the environment of a highly regulated, innovation-focused financial setting.

Based on the above, the main research question that guides this study is

as follows:

What are the main theoretical determinants affecting consumer adoption and preference towards robo-advisors as compared to human financial advisor within the German financial market?

Literature Review

Schumpeter's Innovation Theory

In his masterpiece The Theory of Economic Development (1911/1934) by Schumpeter (1934) maintained that the driving force of economic change is innovation. He argued that entrepreneurs are the cause of development since they bring new combinations of products, production processes, markets, and organizational forms that disturb the existing structures of the market and create new economic opportunities. This phenomenon is also known as the gale of creative destruction, which constantly destroys the old models of the economy and introduces new paradigms of industry (Schumpeter, 1942). Schumpeter's theory has contributed to the modern concept of innovation as not just a part of a linear or incremental process but as a dynamic and frequently disruptive process which remains inherent in the evolution of capitalism.

The practical usefulness of the Schumpeter theory has been realized especially in the financial industry with the advent of robo-advisors, that is, automated investment platforms which provide digital financial advice and control investment portfolios. According to Clarke (2020) and Gomber et al. (2018), robo-advisors are the obvious example of Schumpeterian disruption since they democratize financial services. These platforms provide access to finance to the previously underserved sectors of the population, such as millennials and retail investors, who have no access to the services of human financial advisors. This tendency conforms to the idea of innovation as stated in the definition of Schumpeter, who considered innovation as the process of increasing market boundaries as well as boosting inclusiveness.

Robo-advisors have been particularly disruptive to the German financial scene. Fintech entrants increasingly threaten traditional banks and other financial institutions through algorithm-based advisory services. The distinguishing features of these platforms include affordable and customer-friendly solutions, including simple and user-friendly digital platforms, automated portfolio rebalancing, and scalable customer service models.

Theoretically, change supports the position held by Schumpeter that innovation transforms the competitive processes in various industries. The increasing use of robo-advisors in European markets is the perfect illustration of the practical use of this concept, since it illustrates the principle of creative destruction in practice.

Nevertheless, even though the framework by Schumpeter is useful in explaining the macro-level of technological disruption, it does not exhaustively explain the behavioural, cultural, and psychological elements related to the consumer adoption of new technology at the micro-level. In particular, such problems as trust, the perception of risk, and ease of use have not been studied in depth in a strictly Schumpeterian perspective. This shortcoming supports the necessity to combine the economic innovation theory of Schumpeter with behavioural adoption theories, such as the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Theory of Reasoned Action (TRA), to provide a more detailed account of technology acceptance at the individual level in digital financial services.

Technology Adoption Life Cycle (TALC)

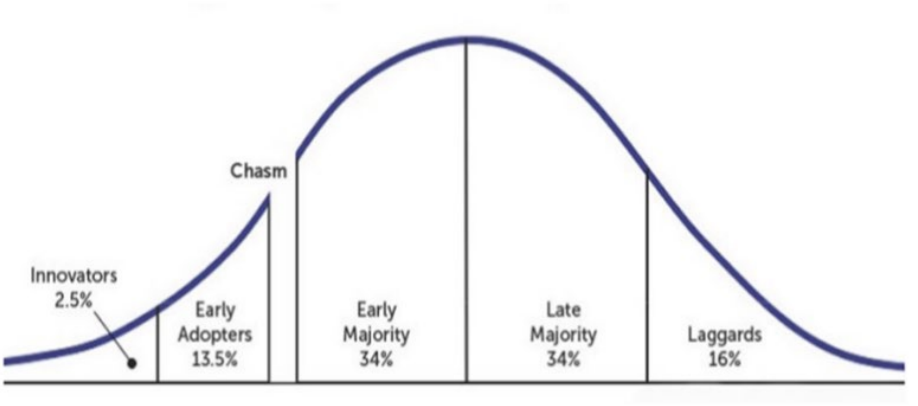
Technology Adoption Life Cycle (TALC) is based on the theory of diffusion of innovations and was subsequently developed by Swanson et al. (1997). It classifies consumers into five different categories, namely innovators, early adopters, early majority, late majority, and laggards, depending on their willingness to use new technologies. Such segmentation shows that there are various attitudes towards innovation, including being enthusiastic to being resistant. The diffusion process of technology occurs in a cumulative manner which traverses the categories of adopters, illustrated by the model as a bell curve (Figure 1).

TALC application on robo-advisors provides a systematic perspective regarding the dissemination of financial technologies among users. It allows to investigate a variety of adoption behaviours in different groups of adopters, starting with the innovators and going all the way to mainstream market. Another adoption barrier identified in this model is the need to surmount the lack of trust and make it engaging to the less technologically-advanced investors (Baudewyn & Draou, 2020). Although TALC offers a sociological explanation of innovation diffusion, it deals mostly with the patterns of diffusion and not with the psychological forces behind innovation. Such limitation can be overcome by incorporating TALC in

models such as UTAUT or TRA in order to explore the reasons behind people making decisions to engage in linking population-level diffusion (TALC) with individual-level cognition and intention (TRA/UTAUT). Cedrell and Issa (2018) and Au and Krahnhof (2018) proved the applicability of TALC to the study of robo-advisor adoption in Europe and showed that cultural and trust elements play a very important role in determining when to adopt them. Similarly, more recent research (Zhang et al., 2025) also implies that cross-cultural differences, institutional trust, and perceived algorithmic fairness can also have an effect on the stage of adoption, especially within the late majority.

Figure 1

Stages of Technology Adoption Life Cycle (TALC) (Swanson et al., 1997)



Unified Theory of Acceptance and Use of Technology (UTAUT)

Influencing performance and social influence, as well as facilitating conditions, are described as the main predictors of behavioural intentions and the use of technology. The UTAUT model (Venkatesh et al., 2003) is a model that summarizes eight models of technology acceptance into one model. In digital finance, UTAUT offers a good theoretical framework to evaluate the user assessment of the robo-advisory platforms.

Recent research by Aw et al. (2023), Yeh et al. (2023), and De Andrés-Sánchez and Gené-Albesa (2023) places UTAUT in the fintech context incorporating trust as a mediating variable. The results further promote the

application of the model to services that provide automation, data-driven decision-making, and perceived financial risk.

UTAUT is unlike TALC, which states how and when innovations diffuse. Rather, it clarifies why people embrace or rebuff particular technologies. Integrating these perspectives fills the gap between structural and behavioural analysis and contributes to the theoretical discussion of the adoption of robo-advisor.

Complementing recent findings, Li et al. (2024) in Computers in Human Behavior verified that trust and algorithm transparency have a strong impact on strengthening the behavioural intention of users in relation to robo-advisors. This indicates that people not only value functionality but also want to be psychologically assured while using financial technologies.

Theory of Reasoned Action (TRA)

The Theory of Reasoned Action or TRA (Fishbein & Ajzen, 1975) concentrates on the mental and social processes driving user intention. It assumes that intention is shaped by an individual's attitude towards the behaviour and by subjective norms–concepts particularly relevant in financial decisions, where perceived trust and social validation play key roles.

Empirical research proves that TRA has an explanatory power in fintech since it supports the view that beliefs about data security, transparency, and trust are significant determinants of the adoption intention (Al-Suqri & Al-Aufi 2015; Roh et al., 2023). A recent cross-cultural investigation by Sharma et al. (International Journal of Bank Marketing) further showed that subjective norms and perceived moral obligations divergently influence the use of robo-advisors across cultures, thus suggesting that frameworks of adoption should be culturally contextualized.

Whereas UTAUT is a technology-driven description, TRA is equally psychological in the sense that it studies the relationship between belief, attitude, and intention. By combining the two theories, it is possible to have an insight into the interplay of rational evaluation (TRA) and technological and social conditions (UTAUT) in shaping behavioural intentions.

Theoretical Integration: Innovation, Adoption, and Behavioural Models

Cogent theoretical framework that connects Schumpeter's Innovation

Theory, TALC, UTAUT, and TRA makes it possible to understand the adoption of robo-advisors at many levels. Schumpeter offered the macroeconomic explanation of disruptive innovation, TALC elucidates the diffusion between the categories of adopters, whereas UTAUT and TRA de-package the psychological and social processes of acceptance. This theoretical combination helps to make it clear that the process of innovation diffusion is not only technological but also culturally and behaviourally conditional. These theories together explain the adoption variance among the consumer segments in Germany, where there is high uncertainty avoidance, high institutional trust, and awareness of data protection (Laumer et al., 2022).

Demographic, Cultural, and Psychological Factors

Recent statistics proved the existence of a solid moderating effect of demographic and cultural variations on the adoption patterns of robo-advisors. Automation and AI-based advice is more acceptable to millennials and Gen Z investors who happen to be digital natives with a high level of financial literacy (Isaia & Oggero, 2022). Yet, the lack of trust remains (Baker, 2017), especially in high uncertainty-avoidance countries, such as Germany (Laumer et al., 2022). These differences can be explained by cultural frameworks, such as the dimensions of Hofstede. Individualistic societies with a sense of autonomy and efficiency are more likely to accept robo-advisors (Hofstede, 2001; Singh & Kumar, 2025). On the contrary, collectivist and high uncertainty-avoidance societies focus on individual trust, which slows down the process of diffusion. Recent investigations (Kim et al., 2023) indicate that formal trust in institutions, perceived security, and algorithmic transparency are decisive across cultures.

Methodology

The research utilizes the structured theoretical review approach, aimed at identifying, assessing, and integrating major theories to determine the factors that affect the adoption of robo-advisors in the German financial market. In contrast to empirical reviews, a theoretical review aims at synthesizing and expanding conceptual information by analyzing, comparing, and synthesizing the existing theoretical approaches (Snyder, 2019). The given strategy allows for building a unified conceptual framework that helps to fill the gaps between the theory of innovation, technology adoption model, and behavioural approaches in the sphere of

FinTech.

Theory Selection Criteria

The selection of theories was based on the following explicit criteria.

- *Relevance:* Innovation, adoption of technology, and theories scrutinizing individual decision-making behaviour were given importance.
- *Fintech Relevance:* Theories that are highly used or modified in the field of financial technologies and, in particular, robo-advisory platforms, were prioritized.
- *Empirical Support:* Theories supported by empirical evidence published in peer-reviewed studies were prioritized in the case of financial or technological adoption research, particularly in western or European environments.
- *Complementarity:* Theories that were complementary to each other in conceptual terms between macro-level dynamics of innovation (e.g., Schumpeter's Innovation Theory, TALC) and micro-level behavioural intentions (e.g., UTAUT, TRA) were selected.

On those grounds, the Innovation Theory by Schumpeter, the Technology Adoption Life Cycle (TALC) theory, the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Theory of Reasoned Action (TRA) were chosen.

Literature Search, Synthesis, and Inclusion Process

In order to make the results transparent and reproducible, systematic literature search was limited to major academic databases including SCOPUS, Web of Science, ScienceDirect, and Google Scholar, according to the methodological principles of Webster and Watson (2002). Keywords included robo-advisor adoption, fintech innovation, technology acceptance, AI- financial service, behavioural finance, and digital investment platform.

The literature published since 2010 and especially that published during the last five years was central to the review. Key studies given in reference lists were also examined manually to find other relevant studies in terms of their theoretical or empirical contribution.

This study used peer-reviewed journal articles, academic books, and

credible conference proceedings to make it scholarly reliable. Studies that included theoretical frameworks or empirical studies applicable when discussing innovation and technology adoption in financial settings were chosen. Also, all articles that were not written in English were excluded as they would have caused inconsistency in interpretation and analysis.

Opinion pieces and blogs were excluded because they are not peer-reviewed publications, which undermines their academic credibility. The research also ignored any studies that were not connected with financial or technological innovations as they were out of scope of the current research. Also, articles that were not rich theoretically or empirically were filtered out to ensure that only high-quality and methodologically sound studies were used to inform the theoretical synthesis.

The process of synthesis and analysis was carried out in the following manner. The synthesis process used a conceptual-theoretical methodology that entailed repetitive reading, coding, and thematic sorting of theoretical constructs (Snyder, 2019). The core constructs were first extracted in the analysis. Moreover, the basic assumptions and the key variables of each theory including innovation dynamics, perceived usefulness, and social influence were laid out. It was then used in comparative analysis in order to evaluate the conceptualisation of technology diffusion and adoption behaviour in different theories.

A stage of integrative mapping was subsequently conducted to come up with a multi-level conceptual model which synthesised macro-level innovation theories (Schumpeter's and TALC) with micro-level behavioural models (UTAUT and TRA). Lastly, synthesis was put into context in the German financial market taking into account sociocultural and regulatory variables in determining the adoption of robo-advisors. This analytical step was performed to ensure that the concepts remained consistent and the findings overlapped with innovation, trust, risk perception, and behavioural intention in the adoption of robo-advisors.

Implications of AI-Enabled FinTech Service in Culture and Ethics

The integration of Artificial Intelligence (AI) in the financial industry brings to light both its ethical and cultural aspects which affect the adoption of technology. These factors are highly impactful in affecting consumer trust and acceptance in Germany which is a high uncertainty-avoidance society with strict data protection laws and transparency preference

(Gomber et al., 2018; Hofstede, 2001).

Privacy and algorithmic accountability continue to be among the major obstacles. Transparency and bias, as well as informed consent, are problems in the utilization of personal financial data in AI-driven decision-making (Piotrowski, 2022). According to recent researches (Aldboush & Ferdous, 2023; Roongruangsee & Patterson, 2023), privacy-by-design, algorithmic transparency, and fair governance frameworks, in accordance with the General Data Protection Regulation (GDPR), should be incorporated in ethical fintech innovation.

Cultural sensitivity is also a significant factor. German consumers tend to perceive trust and reliability as a part of interpersonal relations. Thus, hybrid models combining human and algorithmic wisdom could be more effective in improving adoption by accounting for the cultural expectations of financial consultation (Cedrell & Issa, 2018).

Lastly, the opportunity to empower and promote the responsible use of fintech by promoting digital literacy and ethical awareness of AI, as well as by establishing a transparent communication framework, can be achieved through education and information dissemination. A balance between innovation and ethical and cultural demands assures sustainability and should be the basis of the social doctrine of AI-based financial services in Germany.

Results and Discussion

The current study examines the factors that influence the decision-making of retail consumers in the German financial market between robo-advisors and human advisors. Based on four theoretical models namely the Innovation Theory by Schumpeter, the Technology Adoption Life Cycle (TALC), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Theory of Reasoned Action (TRA), this section critically evaluates the contributions, strengths, and limitations of each one of the theoretical models. The idea is to come up with an integrated and coherent view on the relationship between innovation, behavioural intention, and cultural context and their joint influence on the adoption of robo-advisors in Germany.

Theoretical and Comparative Discussion

Innovation and the Breaking Down of Schumpeter's Innovation Theory and TALC

According to the Innovation Theory of Schumpeter (1942), technological innovation inherently carries with it the concept of creative destruction, through which the introduction of a new technology disrupts an already existing market. Robo-advisors, in the conservative financial sector of Germany, are the best example of a disruption that undermines the long-standing dependence on human advisors. The theory describes the macro-level changes in the financial sphere, involving the characterization of the role of innovation which restructures the market and competition. However, it fails because of ignoring micro-level adoption behavior, including trust, perceived risk, and consumer attitudes, which play an important role in financial decision-making (Gomber et al., 2018).

Technology Adoption Life Cycle (TALC) is an extension of the macro view of Schumpeter's theory. It divides adopters into innovators, early adopters, early majority, late majority, and laggards (Rogers, 2003). In Germany, the first users of robo-advisors are young and technologically skilled professionals, whereas the laggards are older consumers with high confidence in conventional financial institutions.

TALC has low predictive power, although it may prove useful in the description of diffusion patterns. It does not detail why some groups embrace or avert innovation and do not focus on contextual factors, including culture and regulation, which are very strong in the German market.

Behavioural Intentions and Technology Acceptance: UTAUT and TRA

The Unified Theory of Acceptance and Use of Technology (UTAUT) have high predictive power, with performance expectancy, effort expectancy, social influence, and facilitating conditions being some of its constructs (Venkatesh et al., 2003). These dimensions were highlighted by the participants of this study. Moreover, they were underpinned by empirical evidence that found efficiency, affordability, and ease of use to be the benefits of robo-advisors. Nevertheless, the emphasis of UTAUT on functional rationality lacks emotional and trust-based considerations. Further, perceived trust, data privacy, and algorithmic transparency remain conclusive in the context of financial services (Gefen et al., 2003; Roh et

al., 2023).

The Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) is the complement to UTAUT, when social and attitudinal aspects are taken into consideration. The results indicate that the attitudes towards robo-advisors are dependent on subjective norms, family opinion, peer experiences, and media narratives that have a strong impact on the financial behavior of German consumers. TRA, therefore, incorporates social conformity and normative pressures, which are common within the financial culture of Germany. Nonetheless, its presupposition of complete volitional control disregards the external factors, such as low levels of digital literacy or subjective complexity of regulation (Roh et al., 2023).

Comparative Insights

Comparative evaluation shows that Schumpeter's Innovation Theory and TALC work on a macro structural level involving the overarching processes of the diffusion of innovation and market revolution. On the contrary, UTAUT and TRA work on the micro behavioral scale and focus on psychological, social, and attitudinal factors of adoption. Even though TALC acts as a conceptual divider between innovation and adoption, it tends to be devoid of explanatory specifics in terms of individual behavioral drivers. On the other hand, UTAUT provides specificity in behavior through its various constructs, such as performance expectancy and social influence, and ignores cultural and institutional peculiarities.

TRA accounts for the influence of social norms and group decision-making, which is especially pertinent to the culturally united and trust-driven financial conditions in Germany. Although, it does not give much consideration to the effects of technological complexity and regulation models. Put together, the theories make up a model of explanation on multiple levels, where Schumpeter and TALC explain the emergence of innovation and their diffusion within the market, while UTAUT and TRA explain why some people are willing to accept and use these technologies or resist their usage. A combination of these viewpoints thus provides a more comprehensive view of the adoption of robo-advisors, both in the macro aspect of the dynamics of innovation and the micro aspect of sociocultural behaviour.

Integration and Alignment of the Theory and the Evidence

The combined model shows that the use of robo-advisors in Germany is

influenced by the relationship between technological innovation, user perception, and cultural expectations. Creative destruction, as outlined by Schumpeter, characterizes the structural disruption of fintech. While, TALC puts adoption on a curve of diffusion over time. Nevertheless, they both need to be put into perspective with individual level theories, such as UTAUT and TRA, which disclose the behavioral processes behind adoption.

Trust, regulatory assurance, and cultural fit are all that Germany needs to use as it is one of the countries with high uncertainty-avoidance and a high adoption of data protection norms (Gomber et al., 2018; Hofstede, 2001). The cynicism of consumers with algorithmic decision-making can be applied to depersonalised financial advice as a general cultural reluctance. Thus, more culturally congruent are hybrid advisory models that use human supervision in addition to AI-based analytics.

This summary highlights the fact that not one theory is appropriate. Instead, a multi-theoretical perspective best describes the multi-layered determinants, namely economic, behavioural, and cultural, to financial technology adoption.

The synthesis of the theories brings out a number of important findings. Perceived security and trust become the strongest factors that determine the use of robo-advisors. The participants were also worried about the privacy of their data and algorithmic transparency, which UTAUT and TALC did not focus on in sufficient depth, yet were quite relevant to the focus of TRA on attitudes and belief systems. In Germany, cultural conservatism and risk aversion also have a tremendous moderating effect on adoption behavior. Although technological preparedness is high, the use of human financial advisors and careful regulation still retard the pace of adoption.

Although robo-advisors represent a technological revolution in the financial services industry, their effective implementation is conditional on the attainment of cultural alignment, developing a sense of control, and establishing user trust. The overlapping of the innovation dynamics regarding Schumpeter, diffusion framework of TALC, behavioral constructs of UTAUT, and the social norms of TRA ensure a comprehensive theoretical context for the discussion of adoption behavior in the German context. Altogether, the adoption of robo-advisors in Germany is not a technological or economic process; rather, it is a socio-

technical phenomenon conditioned by the diffusion of innovation, behavioral intention, and the comprehensive adoption of cultural values. Combining the two lenses improves theoretical knowledge and helps to create ethical and culturally sensitive policies of fintech.

Conclusion

Robo-advisors are a disruptive technology in the financial services sector, whereby investment advice is democratized, making it accessible to more people via the use of algorithms to manage a portfolio, which previously existed with more affluent clients only (Clarke, 2020). The disruption of the conventional advisory models in the financial ecosystem of Germany is caused by a combination of automation and appropriate regulation, as well as the availability of low-cost services. This paper, however, shows that technological efficiency in itself does not warrant user adoption, since emotional, cultural, and regulatory aspects equally contribute to this phenomenon.

Theoretical and Empirical Contributions

The current study makes a number of theoretical and empirical contributions to the existing literature on the adoption of financial technology and consumer behaviour.

To begin with, it combines four theoretical models namely Schumpeter's Innovation Theory, the Technology Adoption Life Cycle (TALC), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Theory of Reasoned Action (TRA) in one unified model to analyse the adoption of robo-advisors. The combination of macro-level innovation theories with a micro-level behavioural theory developed by this study contributes to knowledge on the joint effects of structural, psychological, and cultural determinants on the decision to adopt robo-advisors.

Secondly, it contributes towards applying the technology adoption theories into a country-context like Germany marked with a high level of trust and which is highly regulated. The results showed that classical models (e.g., UTAUT, TALC) have their limitations when implemented without the notion of trust, data privacy, and cultural conservatism, highlighting the need for context-specific theoretical models.

Thirdly, the current research can determine the psychological limits of

financial decision-making automation. The consumers perceive robo-advisors as effective but cold-blooded, which means that the decision of adoption is already ingrained in both rational and emotional aspects. It redefines technology adoption not only as a functional process but also as an emotional and social one.

Empirical research provides knowledge about the concept of financial inclusion and an advisory model that is hybrid. The results show that hybrid systems in which human advisors supplement algorithmic procedures create stronger user confidence, are able to tailor services more to users, and meet the cultural demands of Germany towards trust and responsibility. This redefines robo-advisors and human advisors as complementary and not substitutive, which acts as a more viable model for financial service delivery.

Policy Implications

The implications of the findings for policymakers, regulators, and industry players are many.

- *Transparency and Trust-Building:* Robo-advisory companies should make information about algorithms, fee structure, and risk profile readily available in order to reduce the uncertainty of users. In highly regulated and expectations-driven private markets such as Germany, transparency in communication is very important.
- *Data Protection and Ethical Standards:* Privacy-by-design solutions, ethical AI audits, and accountability of algorithms can be used to warrant the confidence of users and avoid the misuse of data.
- *Financial Literacy and Consumer Education:* Policymakers and players in the industry should encourage financial and online literacy programs to enable the consumers to work safely with automated financial products.
- *Regulatory Balance:* It requires a more balanced strategy that protects the users by implementing GDPR-confirmed regulation and promotion of AI-based financial services innovation.
- Hybrid Model Promotion: Promoting hybrid advisory structures which incorporate both algorithmic accuracy and human involvement would fulfil the emotional and risk concerns of the users.

- *Inclusive Access:* Collaboration between the industry and the government should be ensured to create inclusive interfaces and access support mechanisms to older, low-income, or inexperienced users of technology.
- All these consequences together provide the justification for the need of ethical, transparent, and culturally adapted regulation of fintech, so that the level of trust in the market of robo-advisors is enhanced and there is increased inclusiveness.

Future Research Directions

The performance and user satisfaction of hybrid robo-human models should be empirically tested in various economic and cultural backgrounds in the future, including the performance of developing markets with varying financial literacy and digital infrastructure. A comparison between countries may also reveal the impact of national culture, regulatory environment, and socioeconomic conditions on adoption patterns.

Moreover, longitudinal studies may trace the evolution of consumer trust, retention, and portfolio performance in hybrid systems, offering realistic data to financial institutions and policymakers.

To conclude, the fusion of human and algorithmic intelligence is the most promising path towards an inclusive, transparent, and trusted digital financial advisory. Innovation, combined with ethical and cultural considerations, should be adopted and long-term consumer well-being and financial stability should be maintained.

Author Contribution

Akanksha Kumari: conceptualization, data curation**,** formal analysis, investigation, methodology, project administration, resources, supervision, validation, visualization, writing – original draft, writing – review & editing**. Sadia Fazil:** conceptualization, data curation, formal analysis, investigation , methodology , project administration , resources , validation, visualization, writing – original draft, writing – review & editing**. Namra Iqbal:** conceptualization, investigation, methodology, resources, supervision, validation, writing – review & editing:

Conflict of Interest

The author of the manuscript has no conflict of interest in terms of financial and non-financial aspects regarding the subject matter or materials that are mentioned in the manuscript.

Data Availability Statement

This research paper is an academic review and does not involve the acquisition or evaluation of empirical data. Thus, no new data was created or analysed in this research. All the sources used are publicly available and have been cited appropriately.

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The authors did not used any type of generative artificial intelligence software for this research.

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